Lesson Objective: Students will understand and apply basic concepts of probability.

WARM-UP!!
Think – Pair – Share:

What is probability?

Think – 1 minute – write in your notes

Pair – 1 minute – talk to your partner. Add what you learned to your notes

Share – 1 minute – add to the class discussion

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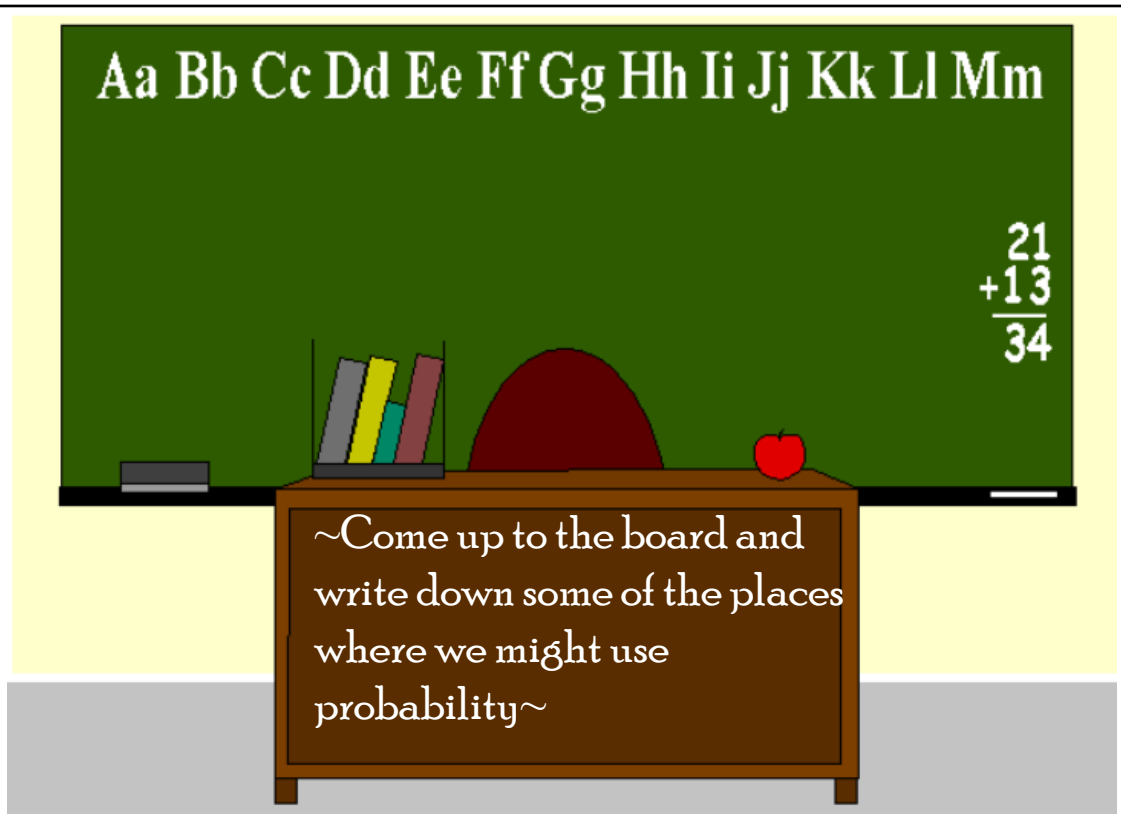
What is probability?

PROBABILITY IS THE LIKELIHOOD THAT SOMETHING WILL OCCUR.



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Other Vocabulary:

Outcome: A possible result of an experiment. (when you roll a number cube, there are 6 possible outcomes)

Event: An outcome or a collection of outcomes. (such as rolling an odd number)

Sample Space: The set of all possible outcomes.

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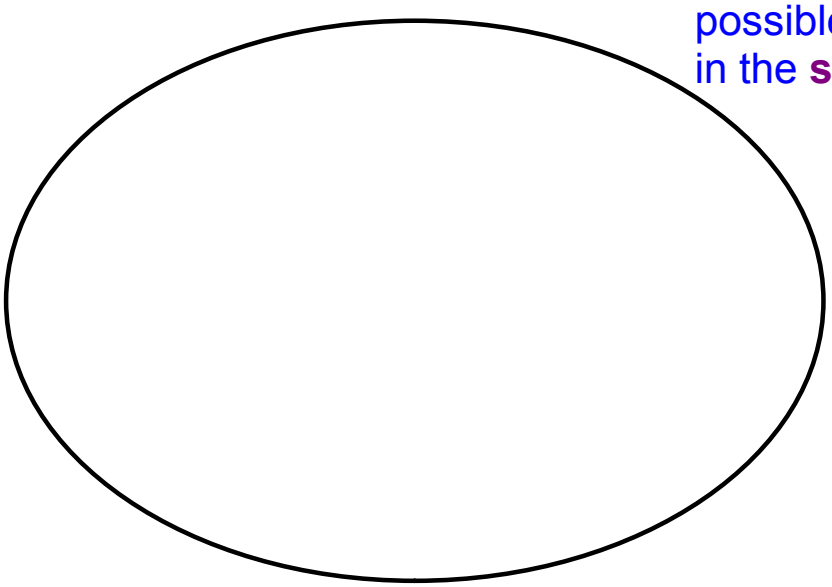
Sample Space

If you were to flip a coin and roll a number cube (die), how many possible outcomes are in the **sample space**?



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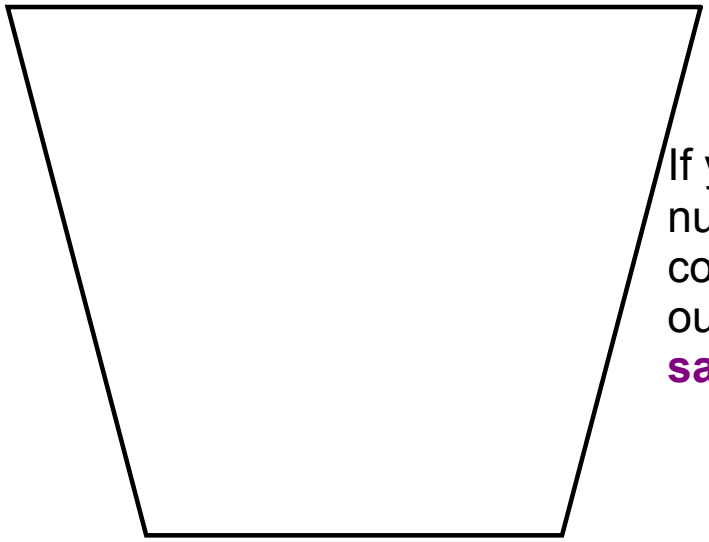
Sample Space



If you were to roll **two** number cubes toss one coin how many possible outcomes are in the **sample space**?

Remember from before:

PROBABILITY IS THE LIKELIHOOD THAT SOMETHING WILL OCCUR.

Probability is a number from 0 to 1

and can be written as a decimal, fraction or percent

Equally likely to happen or to not happen

Likely

Certain

Impossible

Unlikely

P = 0.5

P = 0.25

P = 0.75

P = 0

P = 1

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There are two kinds of probability:

THEORETICAL

EXPERIMENTAL

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Probability: (Theoretical Probability)

$$P(A) = \frac{\text{The number of FAVORABLE outcomes}}{\text{TOTAL number of POSSIBLE outcomes}}$$

Talk to your group about what this means.

Hmmmm...

What is the probability of rolling an odd number on a standard die?

Guesses:

Theoretical Probability means...
"in theory" what SHOULD happen.

The probability of rolling an "odd number" when you roll a die is THEORETICALLY:

Probability: (Theoretical Probability)

$$P(A) = \frac{3}{6}$$

3 ← **The number of FAVORABLE outcomes**

6 ← **TOTAL number of POSSIBLE outcomes**

Should we reduce?

Lesson Objective: Students will be able to find sample spaces and probabilities.

What's the probability you will roll a 3,4,5, or 6?

Experimental Probability:

$$\frac{\text{Number of successes}}{\text{Number of trials}}$$

This is basically like saying, "What actually happens?"

Experimental Probability is based on an experiment.

Lesson Objective: Students will be able to find sample spaces and probabilities.

What is the probability you will roll a one?

Theoretical?

Experimental?

Roll #	Outcome
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

So, what is the experimental probability?

Lesson Objective: Students will be able to find sample spaces and probabilities.

What is the experimental probability you will roll an even number?

Roll #	Outcome
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

So, what is the experimental probability?

Will THEORETICAL probability and EXPERIMENTAL probability be the SAME?

ver?

What is the THEORETICAL probability that you will spin RED?

The spinner was spun 20 times.
The table shows the results.

RED	GREEN	BLUE	YELLOW
5	9	3	3

For which color is the experimental probability equal to the theoretical probability?

How can this spinner be adjusted so that the theoretical probability to spin **blue** is 1/3?

Odds vs. Probability

Odds in favor:

$$\frac{\text{Number of favorable outcomes}}{\text{Number of unfavorable outcomes}}$$

Odds against:

$$\frac{\text{Number of unfavorable outcomes}}{\text{Number of favorable outcomes}}$$

How is this different than probability?

Odds vs. Probability

What is the **probability** of stopping on GREEN?

What are the **Odds** AGAINST stopping on GREEN?

What are the **Odds** IN FAVOR of stopping on GREEN?

Out:
What is the theoretical probability of drawing an ACE out of a deck of cards?

Summary:
The difference between probability and odds is_____

_____

_____.